

Appl. No. : 10/595,804
Filed : June 12, 2006

REMARKS

Amendments

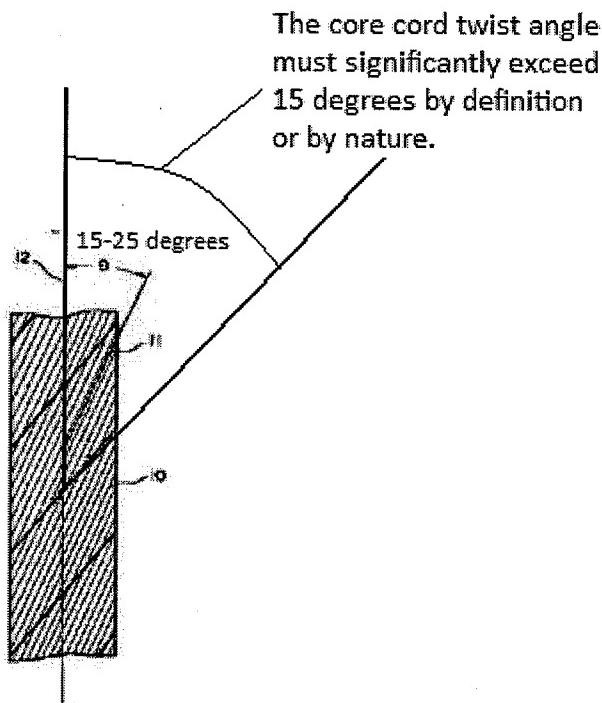
Claims 2 and 10 have been amended to clarify the subject matter. Support for “which is the longitudinal direction of the belt, said twist inclination line of each core cord continuously spirally extending around an exposed surface of the core cord in the longitudinal direction of the core cord” can be found in, for example, Figs. 6 and 7 and the corresponding description. Support for “said irregularities being such that the irregularities generate friction and resistance against sliding of the belt relative to a pulley” can be found in, for example, the last paragraph on page 6 of the specification as originally filed.

No new matter has been added. Applicant respectfully requests entry of the amendments and reconsideration of the application in view of the amendments and the following remarks.

Rejections of Claims 2-12 and 14-18 Under 35 U.S.C. § 103

Claims 2-12 and 14-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakamoto (JP 56-159143 A) in view of Fujita (US 6,216,853) and Kimura (JP 10-184808 A) and Ueda et al. (“Noise and Life of Helical Timing Belt Drives”) and Nakajima et al. (JP 5-12237).

The Examiner asserts: “Nakajima discloses a belt for power transmission wherein the belt comprises a plurality of reinforcement cords (3) and wherein said cords are obtained by twisting a plurality of filaments about an axis (12) parallel to the length direction of the cord (Fig. 3) and wherein an angle of twist between the axis (12) and the twist filament (11) is between 15-25 degrees (abstract).” *Office Action*, p. 5. However, in Nakajima, the angle of 15-25 degrees is formed by the axis (12) and the twist filament (11), not the axis (12) and the cord (10). In Claim 2, the core cord twist angle is defined as “an angle formed by a twist inclination line of each core cord and a line parallel to a longitudinal direction of the core cords which is the longitudinal direction of the belt, said twist inclination line of each core cord continuously spirally extending around an exposed surface of the core cord in the longitudinal direction of the core cord.” In Nakajima, since the twist inclination line of the filament (11) does not continuously spirally extend around an exposed surface of the core cord (3) along the axis of the core cord, the angle of 15-25 degrees is unrelated to “the core cord twist angle” of 15 to 2 degrees recited in Claim 2. In Nakajima, the core cord twist angle as defined above necessarily significantly exceeds 15 degrees as shown below (Modified reproduced Fig. 3 of Nakajima).



Thus, Nakajima does not teach or even suggest the core cord twist angle of 15 to 2 degrees as recited in Claim 2. The other references cited by the Examiner do not make up for the deficiencies of Nakajima.

Further, a helical synchronous belt is typically used for reciprocal or intermittent movement such as that in a printer and copier, which movement is significantly different from that of a power transmission belt such as that taught by Nakajima. None of the references teaches "said irregularities being such that the irregularities generate friction and resistance against sliding of the belt relative to a pulley" in combination with the other features in the helical synchronous belt as recited in Claim 2.

Therefore, Claim 2 would not have been obvious over Sakamoto, Fujita, Kimura, Ueda et al., and Nakajima et al. Claim 10 has been amended in the same manner as in Claim 2, and thus, at least for reasons similar to the above, Claim 10 would not have been obvious. Claims 3-9, 11-12, and 14-18 also would not have been obvious at least due to their dependencies from Claim 2 or 10 in addition to the other further distinguishing features. Applicants respectfully request withdrawal of the rejections.

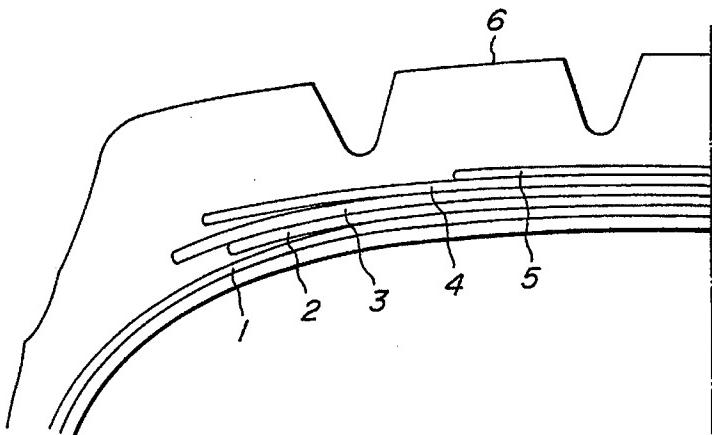
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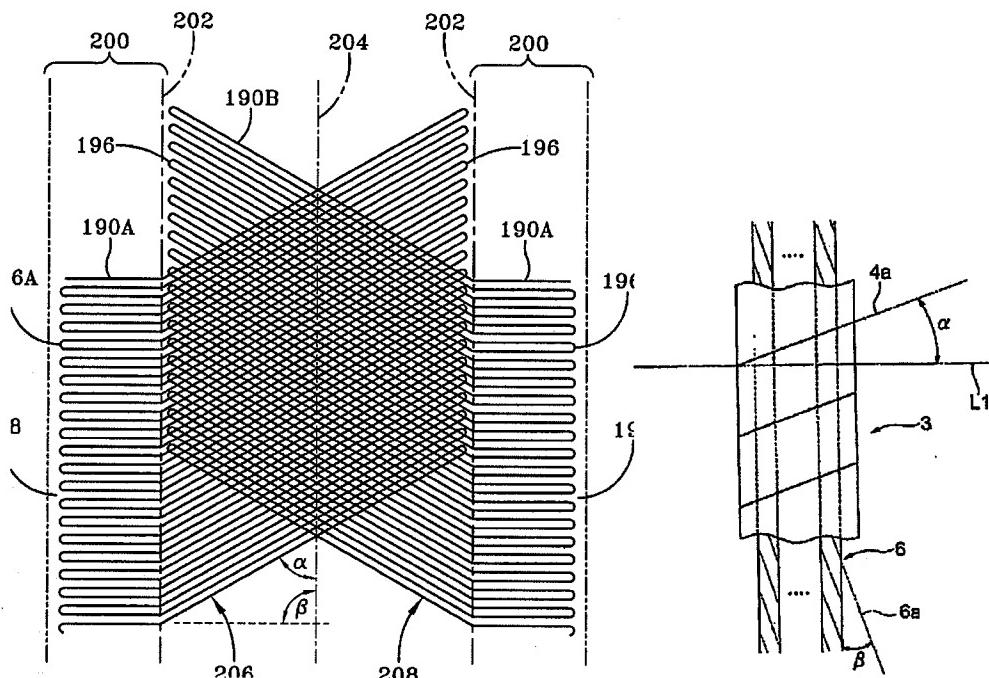
The Examiner asserts: "Umezawa discloses a tire having a plurality of reinforcement cords and wherein the tensile rigidity of the belt can be improved by changing the twisting angle of the filament in the cord (Col. 7, Ln. 46-54)." *Office Action*, p. 9.

However, Umezawa relates to heavy duty pneumatic tires which use belts containing rubberized steel cords (col. 1, lines 7-20), which comprise a radial carcass 1, a belt disposed outside the carcass 1 and comprised of a first belt layer 2, a second belt layer 3, a third belt layer 4 and a fourth belt layer 5, and a tread rubber 6, wherein the second belt layer 3 and the third belt layer 4 are cross belt layers each containing cords inclined at the same cord angle with respect to the equatorial plane of the tire, and the first belt layer 2 contains cords having a cord angle larger than that of the cross belt layers (col. 3, lines 6-17) as shown below (reproduced Fig. 1).



In the heavy duty pneumatic tires, the multiple belt layers containing cords are laminated in this particular manner to strengthen the heavy duty pneumatic tires. Clearly, the belts are embedded and statically fixed in the tire and are not subject to constant shape changes (cf., a helical synchronous belt is constantly changing its shape at pulleys when it is driven). Further, a helical synchronous belt is typically used for reciprocal or intermittent movement such as that in a printer and copier, which movement is unrelated to that of belt layers fixedly embedded in a heavy duty pneumatic tire such as that taught by Umezawa. Furthermore, in pneumatic tires, cords are disposed as shown in, for example, Fig. 28 of U.S. Patent No. 7,740,039 shown below

(cord 190A, 190B, left figure), for rigidity of the tires. The disposition pattern of the cords of pneumatic tires is greatly dissimilar to that of a helical synchronous belt shown below (cord 6, right figure; reproduced Fig. 7 of the instant application.). The rigidity of the tires is unrelated to performance of a helical synchronous belt.

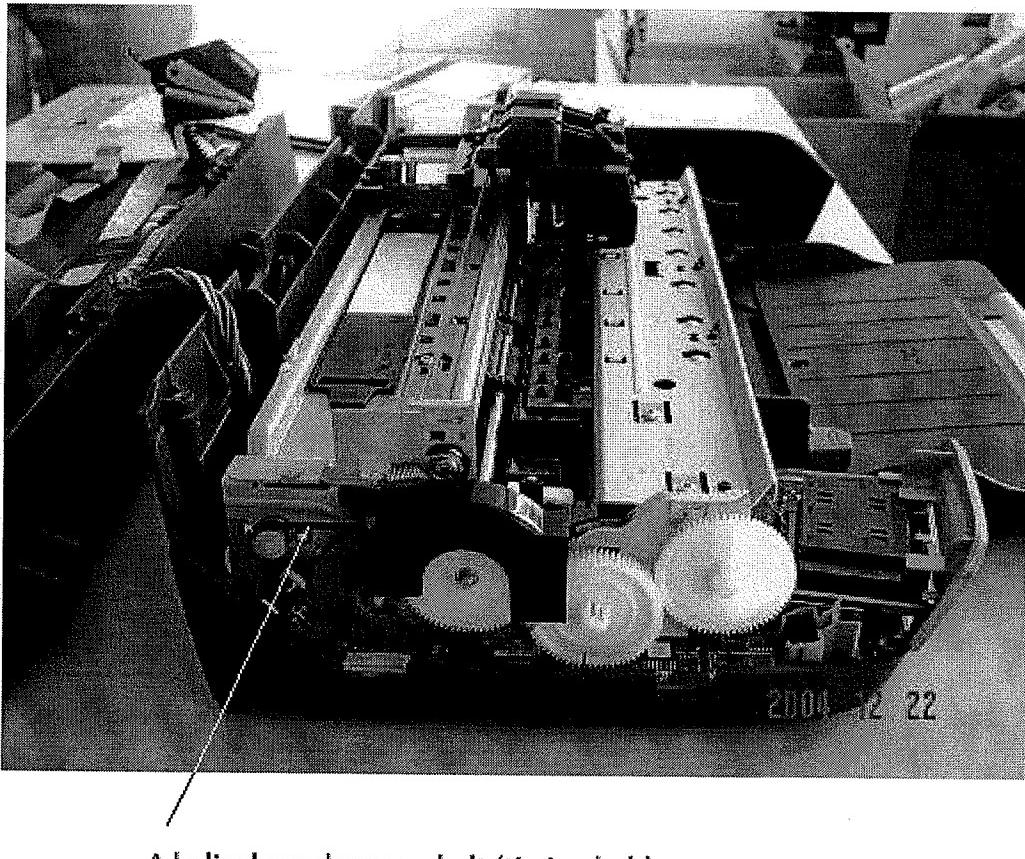


The laminated belt layers of heavy duty pneumatic tires are non-analogous to the presently claimed helical synchronous belt which is typically used in a printer or copier (see below), for which belt high accuracy of movement or disposition is required. Therefore, Umezawa cannot be relied on to reject the presently claimed invention. "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Umezawa does not meet either of these criteria.

Further, none of the references teaches "said irregularities being such that the irregularities generate friction and resistance against sliding of the belt relative to a pulley" in combination with the other features in the helical synchronous belt as recited in Claim 2.

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Therefore, Claim 2 would not have been obvious over Sakamoto, Fujita, Kimura, Ueda et al., and Umezawa. Claim 10 has been amended in the same manner as in Claim 2, and thus, at least for reasons similar to the above, Claim 10 would not have been obvious. Claims 3-9, 11-12, and 14-18 also would not have been obvious at least due to their dependencies from Claim 2 or 10 in addition to the other further distinguishing features. Applicants respectfully request withdrawal of the rejections.



A helical synchronous belt (timing belt)
used in a printer.

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As discussed above in relation to Umezawa, Claim 2 would not have been obvious over Sakamoto, Fujita, Kimura, Ueda et al., and Umezawa. As recognized by the Examiner in the section of “Response to Arguments” on page 2 of the Office Action, Onoe et al. does not provide support for the disclosure of a core cord twist angle between 15 and 2 degrees. Thus, a combination of the above references would not have rendered Claim 2 obvious. Claim 10 has been amended in the same manner as in Claim 2, and thus, at least for reasons similar to the above, Claim 10 would not have been obvious. Claims 3-9, 11-12, and 14-18 also would not have been obvious at least due to their dependencies from Claim 2 or 10 in addition to the other further distinguishing features. Applicants respectfully request withdrawal of the rejections.

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As discussed above in relation to Nakajima et al., Claim 2 would not have been obvious over Sakamoto, Fujita, Kimura, Ueda et al., and Nakajima et al. As recognized by the Examiner in the section of “Response to Arguments” on page 2 of the Office Action, Onoe et al. does not provide support for the disclosure of a core cord twist angle between 15 and 2 degrees. Thus, a combination of the above references would not have rendered Claim 2 obvious. Claim 10 has been amended in the same manner as in Claim 2, and thus, at least for reasons similar to the above, Claim 10 would not have been obvious. Claims 3-9, 11-12, and 14-18 also would not have been obvious at least due to their dependencies from Claim 2 or 10 in addition to the other further distinguishing features. Applicants respectfully request withdrawal of the rejections.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicants reserve the right to pursue at a later date any previously pending or

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other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

CONCLUSION

In light of the Applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. The grounds for rejection which are not discussed herein are moot and Applicants expressly do not acquiesce in the findings not separately addressed. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: August 5, 2010

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